Systematic review of conservative interventions for subacute low back pain

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Authors' objectives
To assess the effect of conservative interventions on pain, disability and return to work for patients with sub-acute low back pain.

Searching
The following databases were searched to April 2002 for reports published in English or Dutch: MEDLINE, AMED, EMBASE, DocOnline, Inspec, CINAHL, Current Contents, PEDro, MANTIS, ChiroACCESS, OSHROM, SPORTDiscus, DARE, ACP Journal Club, the Cochrane Database of Systematic Reviews, PsyCINFO and the Cochrane Controlled Trials Register. Citations in identified studies were tracked using an ISI Web of Science Citation Index and the reference lists in retrieved studies were checked. The author of a review on sub-acute low back pain was asked to scan the list of identified studies.

Study selection
Study designs of evaluations included in the review
Randomised controlled trials (RCTs) were eligible for inclusion.

Specific interventions included in the review
Studies of any type of conservative (nonsurgical) treatment were eligible for inclusion. The included studies were of spinal manipulative therapy, back school, exercise, advice, transcutaneous electrical nerve stimulation (TENS), hydrotherapy, massage, corset, cognitive-behavioural treatment and coordination of primary health care. Thirty-three comparisons of interventions versus alternative interventions, usual care, placebo or control were studied.

Participants included in the review
Studies of patients with sub-acute (from 7 days to 6 months) low back pain, with or without radiation to the leg, were eligible for inclusion. Studies of patients after surgery or pregnant women were excluded. For studies using duration of sick leave as an inclusion criterion for the participants, the sick leave duration was assumed to equal the back pain duration. Studies that did not clearly specify the duration of pain were excluded. The included studies recruited the following groups of patients: patients visiting a Health Maintenance Organisation, a health centre or primary care centre; patients referred for physiotherapy; sick listed patients; patients with work-related back injury; factory workers with back pain; and workers compensated for work-related back pain.

Outcomes assessed in the review
Studies were included if they assessed pain, disability or return to work. Where possible, the review selected results for pain measured using visual analogue scores and results for disability measured using the Roland Morris questionnaire.

How were decisions on the relevance of primary studies made?
The authors did not state how the papers were selected for the review, or how many reviewers performed the selection.

Assessment of study quality
Study quality was assessed using internal validity criteria and other descriptive and statistical criteria, as described by the Cochrane Collaboration Back Review Group (see Other Publications of Related Interest). The review considered both internal validity (9 criteria) and overall validity (19 criteria). Studies scoring 50% or more on the internal and overall validity criteria (both were considered) were classified as high-quality studies. Two authors independently assessed validity and resolved any disagreements through discussion. The reviewers were not blinded. Inter-rater agreement was assessed.
Data extraction
The authors did not state how the data were extracted for the review, or how many reviewers performed the data extraction. For each RCT, the means and standard deviations for pain and disability outcomes (where presented) were extracted. Effect sizes (ESs) and 95% confidence intervals (CIs) were estimated for pain and disability for each follow-up period, using whatever data were presented. The number of participants who returned to work was extracted and risk ratios (RRs) and 95% CIs were estimated. The authors of the primary studies were contacted for missing data but no additional data were obtained.

Methods of synthesis
How were the studies combined?
The studies were grouped according to two different definitions of the duration of sub-acute back pain: 6 weeks to 3 months and 7 days to 6 months. A narrative synthesis of the results from high-quality studies was presented. Data from two clinically homogeneous studies were used to estimate the RR and 95% CI for return to work using a random-effects meta-analysis.

How were differences between studies investigated?
Clinical homogeneity among the studies was assessed by considering quality, duration of low back pain, intervention, measured outcomes and follow-up. The narrative synthesis included a brief overview of the methodological quality of the included studies.

Results of the review
Thirteen RCTs (n=2,950) were included.

One RCT was rated high quality for internal validity. Six RCTs were rated as high overall quality.

Most (81%) of the comparisons found no significant difference in pain or disability between the experimental interventions and the control. Of the 6 studies providing return to work data, three reported an improvement in return to work.

Low back pain for 6 weeks to 3 months (3 RCTs): none of the RCTs had high internal validity. Two RCTs with high overall quality found that advice on return to work improved efficacy compared with usual medical care at 3, 6, 12 months and 5 years; the RR was 1.45 (95% CI: 1.17, 1.79) at 3 months, 1.56 (95% CI: 1.22, 1.99) at 6 months, 1.21 (95% CI: 1.05, 1.40) at 1 year and 1.23 (95% CI: 1.10, 1.38) at 5 years.

Low back pain for 7 days to 6 months (10 RCTs): the only RCT with high internal validity found a small effect on disability at 6 and 12 months for an exercise programme compared with usual care; the ES was 0.2 (95% CI: 0.1, 0.5) at 6 months and 0.3 (95% CI: 0.1, 0.5) at 12 months; the difference on the Roland Morris questionnaire was 1.35 points (95% CI: 0.13, 2.57) at 6 months and 1.42 points (95% CI: 0.29, 2.56) at 12 months.

Three other RCTs were rated as having high overall quality. One RCT only reported results immediately post-treatment and only reported the disability results for a subset of participants. This RCT found that spinal manipulative therapy reduced pain and disability compared with TENS (for pain, ES 0.5, 95% CI: 0.1, 1.0; for disability, ES 1.3, 95% CI: 0.5, 2.0); spinal manipulative therapy reduced pain and disability compared with massage (ES 1.5, 95% CI: 0.8, 2.2); and wearing a corset reduced disability compared with massage (ES 0.9, 95% CI: 0.1, 1.6). One RCT found that coordination of health care reduced disability among injured workers at 6 months (ES 0.4, 95% CI: 0.1, 0.9). One RCT found that TENS plus rehabilitation increased return to work rates at 5 weeks compared with rehabilitation alone (RR 2.0, 95% CI: 0.7, 5.9).

Authors' conclusions
There were few studies on the treatment of sub-acute low back pain. Evidence from most of the existing studies was limited due to methodological flaws and the lack of a standard definition for sub-acute low back pain.
The review question was clear in terms of the study design, intervention, participants and outcomes. Numerous relevant sources were searched, but the search terms were not stated. Limiting the search to studies published in either of two languages may have resulted in the omission of other relevant studies. The methods used to select the studies and extract the data were not described; hence, it is not known whether efforts were made to reduce errors and bias. Two reviewers assessed validity using validated criteria to reduce the potential for bias and errors.

Relevant information on the included studies was tabulated. Only studies considered to be of the highest quality were combined in the narrative synthesis. Data were only pooled from studies that the authors considered to be clinically homogeneous, which from the graph presented appears to have been statistically acceptable. Given the paucity of good quality studies, the authors aptly did not draw firm conclusions about the effects.

Implications of the review for practice and research
Practice: The authors stated that for pain lasting from 6 weeks to 3 months, advice may be of benefit; for pain lasting from 7 days to 6 months, other treatments such as manipulation, exercise and TENS may be helpful.

Research: The authors stated that they would like to see a well-conducted trial of multidisciplinary biopsychosocial rehabilitation.

Bibliographic details

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Other publications of related interest

Indexing Status
Subject indexing assigned by NLM

MeSH
Cognitive Therapy; Counseling; Electric Stimulation Therapy; Exercise Therapy; Humans; Low Back Pain /pathology /rehabilitation /therapy; Manipulation, Chiropractic; Massage; Practice Guidelines as Topic; Prognosis; Randomized Controlled Trials as Topic; Severity of Illness Index; Treatment Outcome

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This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.